

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
6 January 2005 (06.01.2005)

PCT

(10) International Publication Number
WO 2005/000731 A2

- (51) International Patent Classification⁷: **B67D**
- (21) International Application Number:
PCT/US2004/018642
- (22) International Filing Date: 9 June 2004 (09.06.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/477,382 9 June 2003 (09.06.2003) US
- (71) Applicant (for all designated States except US): **DAKO-CYTOMATION DENMARK A/S** [DK/DK]; Produktionsvej 42, DK-2600 Glostrup (DK).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **FALB, Peter** [US/US]; 70 Hersey Street, Hingham, MA 02043 (US). **THAXTER, Charles, W., Sr.** [US/US]; 35 Shattuck Street, Pepperell, MA 01463 (US). **CLARE, David** [GB/GB]; 102 Wenham Street, Danvers, MA 01923 (GB). **SACCO, Victor, Jr.** [US/US]; 1 Independence Drive #12, Methuen, MA 01844 (US). **LEON, Scott** [US/US]; 8116

Lighthouse Lane, Fort Collins, CO 80528 (US). **LUCIA, Shannon** [US/US]; 3 Natowich Way, Salisbury, MA 01952 (US). **RIOUX, Eric, R.** [CA/US]; 20 Turning Mill Lane, Quincy, MA 02169 (US).

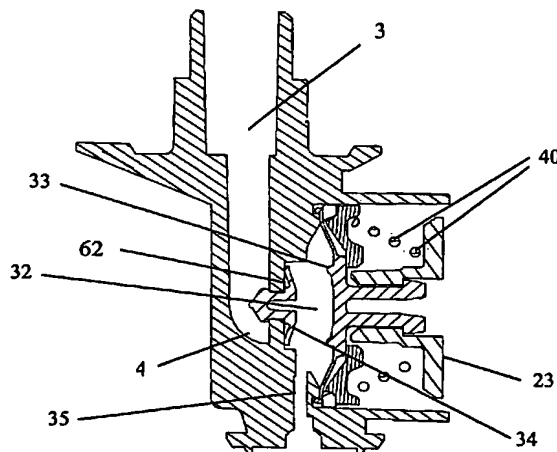
(74) Agent: **RESSUE, Nicole, A.**; Santangelo Law Offices, P.C., 125 South Howes, Third Floor, Fort Collins, CO 80521 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: **DIAPHRAM METERING CHAMBER DISPENSING SYSTEMS**



(57) Abstract: This invention describes a method and apparatus for a dispenser assembly (1) suitable for dispensing reagent in an automatic system. In embodiments, the present invention may include a metering chamber (32) that accurately controls the amount of fluid dispensed. In other embodiments, the amount of fluid may be controlled by the action of a flexible diaphragm (33), which may be assembled into a cavity of a dispenser housing creating a metering chamber. In another embodiment, a volume created by a position (36) to an inverted or compressed position (37), it may substantially conform to the inner surface of the metering chamber. Fluid enters a metering chamber through an inlet unidirectional valve (34) and exits a metering chamber through an outlet unidirectional valve (25).

WO 2005/000731 A2



European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

- *without international search report and to be republished upon receipt of that report*

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
6 January 2005 (06.01.2005)

PCT

(10) International Publication Number
WO 2005/000731 A3

(51) International Patent Classification⁷: **B01L 3/02**,
3/00, 11/00, G01N 21/00, 1/18, 1/10

(21) International Application Number:
PCT/US2004/018642

(22) International Filing Date: 9 June 2004 (09.06.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/477,382 9 June 2003 (09.06.2003) US

(71) Applicant (for all designated States except US): **DAKO-
CYTOMATION DENMARK A/S** [DK/DK]; Produk-
tionsvej 42, DK-2600 Glostrup (DK).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **FALB, Peter**
[US/US]; 70 Hersey Street, Hingham, MA 02043 (US).
THAXTER, Charles, W., Sr. [US/US]; 35 Shattuck
Street, Pepperell, MA 01463 (US). **CLARE, David**
[GB/GB]; 102 Wenham Street, Danvers, MA 01923 (GB).

SACCO, Victor, Jr. [US/US]; 1 Independence Drive #12,
Methuen, MA 01844 (US). **LEON, Scott** [US/US]; 8116
Lighthouse Lane, Fort Collins, CO 80528 (US). **LUCIA,
Shannon** [US/US]; 3 Natowich Way, Salisbury, MA 01952
(US). **RIOUX, Eric, R.** [CA/US]; 20 Turning Mill Lane,
Quincy, MA 02169 (US).

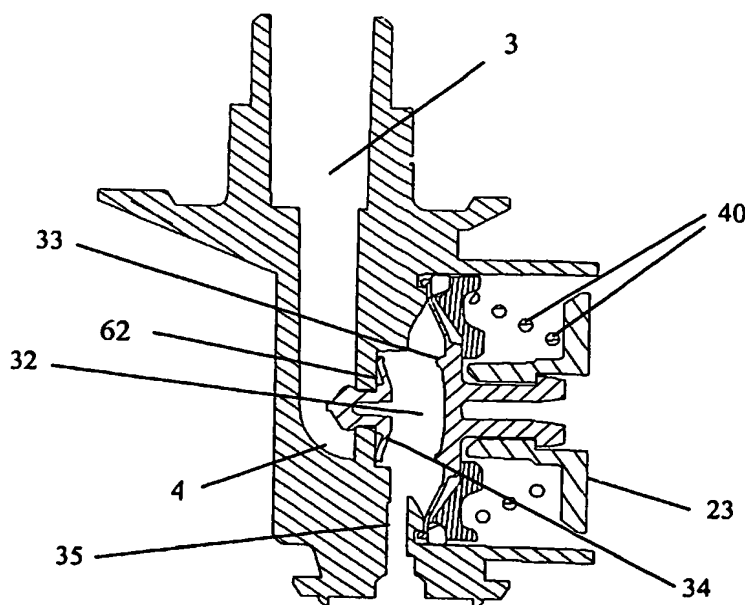
(74) Agent: **RESSUE, Nicole, A.**; Santangelo Law Offices,
P.C., 125 South Howes, Third Floor, Fort Collins, CO
80521 (US).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: **DIAPHRAM METERING CHAMBER DISPENSING SYSTEMS**



(57) Abstract: This invention describes a method and apparatus for a dispenser assembly (1) suitable for dispensing reagent in an automatic system. In embodiments, the present invention may include a metering chamber (32) that accurately controls the amount of fluid dispensed. In other embodiments, the amount of fluid may be controlled by the action of a flexible diaphragm (33), which may be assembled into a cavity of a dispenser housing creating a metering chamber. In another embodiment, a volume created by a metering chamber may determine the volume of dispensed fluid. When a diaphragm is compressed from its free or uncompressed position (36) to an inverted or compressed position (37), it may substantially conform to the inner surface of the metering chamber. Fluid enters a metering chamber through an inlet unidirectional valve (34) and exits a metering chamber through an outlet unidirectional valve (25).

WO 2005/000731 A3



European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(88) Date of publication of the international search report:
12 May 2005

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.